

Razor having two slideable shaving headsField of the invention

The invention relates to safety razors and, more  
5 specifically, to razors provided with two shaving heads.

Background of the invention

Several attempts have been made to propose a razor  
including at least two shaving heads having different  
sizes to allow shaving of different hair areas of the  
10 body.

US patent No. 4,461,078 granted to Carreker discloses  
a razor assembly including first and second handle  
portions, with first and second razor heads mounted at the  
ends of the handle portions. The handle portions are  
15 pivotally mounted together so that the heads may be moved  
from a position wherein the handle portions are  
substantially in a straight line with the heads widely  
spaced, to a position wherein the handle portions make a  
small acute angle with the heads close to each other.

20 US patent No. 4,285,124 granted to Diakonov discloses  
a safety razor comprising a normal sized razor head and a  
retractable miniature razor head which is movable from a  
first position where it is retracted behind the normal  
sized head to a second position where it is deployed above  
25 the normal sized head for use in trimming the area beneath  
the center of the user's nose.

One disadvantage of such razors is that the use  
thereof is not perfectly safe. The user has to be very  
cautious in order not to cut himself or herself with one  
30 razor head while using the other.

A further disadvantage of Carreker's razor is that its  
handle is near twice as long as a standard razor handle,  
which makes it difficult to grip comfortably the handle.

Summary of the invention

35 It is an object of the invention to provide a razor  
having two shaving heads, the use of which is safer.

It is another object of the invention to provide a razor, the use of which is more comfortable.

The razor according to the invention comprises:

- an elongated hollow handle having a longitudinal axis,  
5 said handle having a front end and a back end opposite to the front end,
- a first razor head and a second razor head, both mounted onto a support which is mounted in the handle and is slideable with respect of the same along a  
10 direction substantially parallel to the handle axis, between at least:
  - a first use position in which said first razor head projects outward from the front end of the handle to allow shaving, while the second razor head is lodged within the handle, and  
15
  - a second use position in which said second razor head projects outward from the back end of the handle to allow shaving, while the first razor head is lodged within the handle,
- 20 - a manually operable actuator mounted on the support for moving the same from one position to the other.

Accordingly, while the one head is in use position, the other is substantially out of reach, thereby decreasing the risk that the user cut himself or herself.

25 The razor according to the invention is also compact, which allows comfortable gripping while shaving.

According to a preferred embodiment, the support is capable of occupying a third or intermediate position in which both razor heads are lodged within the handle.

30 The razor may comprise means for locking said support in its first use or second use or intermediate position.

Such locking means may be at least partly provided onto said manually operable actuator.

The actuator preferably comprises a hollow body and a

pusher provided with arms capable of being clipped in slots provided in the handle. The pusher is slideable with respect of the body, between a locking position in which the arms are received in the slots, and an unlocking position in which the arms are located outward from the slots.

The razor preferably comprises a compression spring which permanently biases the pusher toward its locking position.

Furthermore, the handle may comprise two longitudinal rails which slidably cooperate with the support so as to guide it during movement.

The razor heads preferably have different sizes, in order to allow shaving of different hair areas of the body.

In a preferred embodiment, where each razor head consists in a removable cartridge, the razor comprises a lock-and-release mechanism for disposal and replacement of each razor head.

Each lock-and-release mechanism is mounted on the support, at an end thereof, and comprises:

- a resilient V-shaped retainer having two legs provided with bearing members for the mounting of a razor head, the legs having lateral wings;
  - a plunger;
  - a spring biasing the plunger towards the razor head;
  - a cam member for biasing the legs of the retainer away from each other,
- the razor further comprising a pair of actuators for triggering said lock-and-release mechanism, each actuator comprising:
- a flat spring member having a fixed portion attached to the handle and a flexible portion,

- a button accessible to the fingers of a user and cooperating with said flexible portion, whereby, in one use position, the lateral wings cooperate with the flexible portion (thereby allowing disposal and 5 replacement of the razor head), whereas in the intermediate position or in the other use position the lateral wings cooperate with the fixed portion (thereby preventing disposal of the razor head).

In a preferred embodiment, wherein the handle 10 comprises a top shell member and a bottom shell member, in addition to their triggering function, the spring members form clip members for holding said shell members together.

More precisely, the fixed portion of each spring member comprises a pair of holes which cooperate with hooks formed in the top shell member and the bottom shell 15 member, respectively.

In addition, the razor may comprise a movable or flexible cover covering each end of the handle when the corresponding razor head is lodged within the handle.

20 The above and other objects and advantages of the invention will become apparent from the detailed description of preferred embodiments of the invention, considered in conjunction with the accompanying drawings.

Brief description of the drawings

25 **Figure 1** is a perspective view of a razor according to a preferred embodiment of the invention, shown in a first use position.

**Figure 2** is a perspective view of the razor of **figure 1**, shown in an intermediate position.

30 **Figure 3** is a perspective view of the razor of **figures 1 and 2**, shown in a second use position.

**Figure 4** is an top view of the razor of the preceding figures, in the intermediate position.

**Figure 5** is an exploded perspective top view of the

razor of the preceding figures.

**Figure 6** is a longitudinal elevational cut view of the razor of the preceding figures, taken along the line VI-VI of figure 4.

5       **Figure 7** is a transversal elevational cut view of the razor of the preceding figures, taken along the line VII-VII of **figure 4**.

10      **Figure 8** is a partial perspective top view of the razor of the preceding figures, shown in the intermediate position.

**Figure 9** is a partial perspective bottom view of the razor of the preceding figures, shown in the intermediate position.

15      **Figure 10** is an exploded partial perspective bottom view of the razor of **figure 9**.

**Figure 11** is a view similar to **figure 8**, showing the razor in a first use position.

**Figure 12** is a view similar to **figure 8**, showing the razor in a second use position.

20      **Figure 13** is a top perspective view showing a lock-and-release mechanism for the razor of the preceding figures, in an intermediate position.

**Figure 14** is view similar to Figure 13, showing the lock-and-release mechanism in a first use position.

25      **Figure 15** is a planar top view showing a holder for the razor of the preceding figures.

**Figure 16** is an exploded perspective view showing the holder of **figure 15** and the razor of the preceding figures.

30      **Figure 17** is a perspective view showing the assembly of the holder of **figures 15** and **16** and the razor of the preceding figures.

**Figure 18** is a planar top view of the assembly of **figure 17**.

A razor according to the invention is generally indicated by reference number **1** in the drawings.

Razor **1** comprises a handle **2** which is elongated along a longitudinal axis **X**. Handle **2** is hollow, thereby forming a housing defining an open front end **3** and an opposite open back end **4**. It has a central constriction **5** and presents in side view an arcuate shape, thereby providing comfortable hand grasping. Therefore, the handle axis **X** can be considered as an arcuate average line joining the center points of the open ends **3, 4**.

Razor **1** further comprises a first shaving blade unit or head **6**, including one or more blades (three in the illustrated example) and which is mounted at the front end **3** of the handle **2** so that the edges of the blades are substantially perpendicular to the handle axis **X**.

First head **6** is movable with respect of the handle **2** along a direction substantially parallel to the handle axis **X**, between:

- a use position in which the head **6** projects outward from the front end **3** of the handle **2** (**figures 1, 11**), and
- a retracted position in which the head **6** is lodged within the housing formed within the handle **2** (**figures 2, 3, 6, 8, 12**).

In the use position, the first head **6** is ready for use to allow shaving, while in the retracted position it is hidden in the handle **2** so that it is inoperable and substantially unreachable with the fingers to be protected from damage and avoid any accidental cutting.

As illustrated on **figure 5**, razor **1** also comprises a second blade unit or head **7** comprising one or more blades (two in the illustrated example) and which is mounted at the back end **4** of the handle **2** so that the edges of the

blades are substantially perpendicular to the handle axis **X**. In other words, first head **6** and second head **7** extend substantially parallel to each other.

The heads **6**, **7** preferably have different sizes, the 5 first one **6** having a standard width **W6** while the second one **7** has a width **W7** which is less than **W6** (see **figures 1** and **3**).

Standard head **6** is used in normal shaving (beard, legs), while the narrow one **7** is dimensioned for easy 10 maneuverability in order to facilitate accurate trimming of particular hair areas, e.g. moustaches, sideburns or pubic hairs.

As the standard head **6**, the narrow head **7** is movable with respect of the handle **2** along a direction parallel to 15 the handle axis **X**, between:

- a use position in which the narrow head **7** projects outward from the back end **4** of the handle **2** (**figures 3, 12**), and
- a retracted position in which the narrow head **7** is lodged within the housing formed by the handle **2** 20 (**figures 1, 2, 6, 11**).

In its use position, the narrow head **7** is ready for use to allow shaving, while in the retracted position it is hidden in the handle **2** so that it is inoperable and 25 unreachable with the fingers to be protected from damage and avoid any accidental cutting.

Both heads **6**, **7** are mounted on a common support or platform member **8** which is in turn mounted in the handle **2** so as to be safely slideable with respect of the same, 30 between:

- a first use position (**figure 11**) in which the standard head **6** is in its use position while the narrow one **7** is in its retracted position,

- a second use position (**figure 12**) in which the standard head **6** is in its retracted position while the narrow one **7** is in its use position, and
- an intermediate position (**figures 6, 8, 9**) in which both shaving heads **6, 7** are in their retracted position (**figures 6, 8**).

As illustrated on **figure 5**, handle **2** comprises a bottom shell member **9** and a top shell member **10** which are permanently attached to one another and together enclose the sliding platform member. **Figure 8** is a perspective top view of the razor **1** from which the top shell member **10** has been removed to show the inside of the razor **1**. **Figure 9** is, in turn, a perspective bottom view of the razor **1** from which the bottom shell member **9** has been removed to show the inside of the razor **1**.

As illustrated in **figure 8**, the platform member **8** comprises an elongated arcuate plate member **11** which has substantially the same curvature as the handle **2**. Platform member **8** comprises a longitudinal stiffening rib **12** and two spaced transversal ribs **13, 14** which protrude from a top surface **15** of the plate member **11**, and also a hollow central housing **16** defined, on the one hand, by a pair of opposed transversal walls **17, 18** protruding from the top surface **15**, and, on the other hand, by a pair of opposed longitudinal side walls **19, 20** also protruding from the top surface **15** in the continuity of the transversal walls **17, 18**.

A flat arcuate guiding plate **21** is clipped onto the platform member **8**. More precisely, the guiding plate **21** is provided with a central hole **22**, the edge of which cooperates with hooks **23, 24** protruding from the transversal walls **17, 18**. The guiding plate **21** has a bottom surface **25** which is in contact with a top edge **26**

of the stiffening ribs **12, 13, 14**, thereby providing stable mounting of the guiding plate **21** on the platform member **8**.

Platform member **8** also comprises a pair of parallel 5 ribs **27, 28** protruding from a lower surface **29** of the platform member **8**, and which extend longitudinally substantially all along the length of the platform member **8**.

As illustrated in **figure 5**, the handle **2** is provided 10 with means for guiding the sliding platform member **8**, which comprise two parallel elongated bottom rails **30, 31** protruding from an inner bottom surface **32** of the bottom shell member **9**, and extending along each lateral side of the pair of parallel ribs **27, 28**.

15 The guiding means also comprise two parallel elongated top rails **33, 34** protruding from an inner top surface **35** of the top shell member **10**, extending along lateral edges of the guiding plate **21**.

As a result, the platform member **8** is precisely 20 slidingly guided between the bottom shell member **9** and the top shell member **10**.

Razor **1** further comprises a manually operable actuator 25 **36** which is slideable with respect of the top shell member **10** along a direction substantially parallel to the handle axis **x**, for moving the platform member **8** from one position to the other.

As illustrated on **figure 8**, the actuator **36** is mounted 30 on the platform member and comprises a cylindrical hollow body **37** which has four projecting parallel flexible lugs **38** passing through a central aperture **39** defined in the platform member **8** by the housing **16**. The lugs **38** are provided with hooks **40** which engage longitudinal bridge members **41** extending across the central aperture **39**, so

that the actuator **36** is clipped on the platform member **8**.

The hollow body **37** of the actuator **36** passes through an elongated aperture **42** which is formed in the top shell member **10** between the top rails **33, 34**. The actuator **36** 5 also has a substantially flat head **43** which projects, at one end of the body **37** opposite to the lugs **38**, from a top external surface **44** of the top shell member **10**.

The head comprises a recess **45** for receiving a finger (e.g. the thumb) of a user to help him grip the actuator 10 **36**.

The actuator **36** also comprises a release button **43** including a pusher **47** which is slidably mounted in the body **37** along an elevational axis **Y** substantially perpendicular to the handle axis **X**. Pusher **47** has a main body **48** mounted in a corresponding bore **49** formed in the body **37** of the actuator **36**, and diametrically opposed transversal arms **50, 51** which project laterally from the main body **48** and which are received in respective lateral slots **52** formed in the longitudinal side walls **19, 20** of 20 the housing **16**.

The release button **46** also includes a cover member **53**, which projects from the recess **45** to be accessible for a user's finger, and which is clipped onto the pusher **47** by means of hooks **54** cooperating with corresponding shoulder surfaces **55** formed on the main body **48** of the pusher **47**. 25

Pusher **47** is slideable with respect of the body **37** along the elevational axis **Y**, between a locking position in which the pusher **47** is at a distance from the plate member **11**, the cover member **53** projecting from the recess 30 **45**, and an unlocking position in which the pusher **47** is close to the plate member **11**, the cover member **53** being at least partly received within the recess **45**.

Pusher **47** comprises a cylindrical pin **56**, in the

continuity of the main body **48** on the other side of the transversal arms **50, 51**, so that the pusher **47** is substantially cross-shaped.

A return spring **57** is mounted in compression between 5 the pusher **47** and the platform member **8**, so as to permanently bias the pusher **47** towards its locking position. More precisely, spring **57** has a bottom end **58** which is mounted onto a pin **59** protruding from the plate **11**, and a top end **60** which is mounted on the pin **56** of the 10 pusher **47**, the pins **56, 59** thereby together forming spring guiding means.

As illustrated in **figure 10**, each top rail **33, 34** is provided with three spaced apart slots **61, 62, 63**, in which the transversal arms **50, 51** are capable of being 15 received, depending on the position of the actuator **36**, i.e. a front end slot **61**, located near the front end **3** of the handle **2**, a back end slot **62**, located near the back end **4**, and an intermediate slot **63**, located between the front end slot **61** and the back end slot **62**.

20 As illustrated in **figure 9**, in the intermediate position of the actuator **36**, the arms **50, 51**, which act as locking means for locking the platform member **8** in position, are received in the intermediate slots **63**. In this position, the platform member **8** is in its 25 intermediate position, both shaving heads **6, 7** being received within the handle **2**.

As the spring **57** biases the pusher **47** to its locking position, the arms **50, 51** abut longitudinally against transversal shoulder surfaces of the intermediate slots 30 **63**, thereby preventing the platform member **8** to move longitudinally.

Whenever the user wants to take out any of the shaving heads **6, 7**, he squeezes the release button **46** against the

action of the return spring **57**, thereby releasing the arms **50**, **51** from the intermediate slot **63**. The user is then capable of sliding the actuator **36** in each direction with respect of the handle **2** so as to move the platform member **8** toward the first or the second use position.

During movement of the platform member **8** toward any of the first or second use positions, the platform member **8** being precisely guided by the top and bottom rails **30**, **31**, **33**, **34** as described hereabove, the arms **50**, **51** slide onto edges **64** of the top rails **33**, **34**, thereby holding the pusher **47** in its unlocking position.

As soon as the arms **50**, **51** come in front e.g. of the front end slot **61**, the return spring **57** suddenly moves the pusher **47** toward its locking position, where the arms **50**, **51** are clipped in the front end slots **61**, thereby locking the platform member **8** in its first use position.

Respectively, as soon as the arms **50**, **51** come in front of the back end slot **62**, the spring **57** suddenly moves the pusher **47** toward its locking position, where the arms **50**, **51** are clipped in the back end slots **62**, thereby locking the platform member **8** in its second use position.

Accordingly, whichever the position of platform member **8** is, it is strongly held in position with respect of the handle **2**, thereby preventing the heads **6**, **7** from accidentally moving from one position to the other.

Accordingly, there is low risk that a user cuts himself or herself with one head while shaving with the other. Moreover, since the actuator **36** is on a top side of the razor **1**, there is also low risk that during shaving the fingers of the user, which grasp the razor **1** by its lateral faces, accidentally move the actuator **36**. This further increases safety of the razor **1**.

Moreover, whichever the position of the platform

member **8** is, the flat arcuate guiding plate **11** always blanks the elongated aperture **42**, thereby preventing visual access to the technical parts inside the handle **2** and therefore enhancing visual aspect of the razor **1**.

5 In addition, each shaving head **6**, **7** consists in a replaceable cartridge which is removably attached to the platform member **8** so that after the edges of the blades are dulled the cartridges **6**, **7** are disposed of and replaced by new ones.

10 In order to achieve replacement of the shaving heads **6**, **7**, the razor **1** includes two lock-and-release mechanisms **65**, respectively mounted in seats **66**, **67** provided at both ends of the platform member **8**.

15 Each lock-and-release mechanism **65** includes a resilient V-shaped retainer **68** having two legs **69**, **70** movable toward and away from each other. Bearing members **71** are formed at the ends of the legs **69**, **70**, removably attached to corresponding curved hooks **72** provided on the back side of the corresponding shaving head **6**, **7** to permit 20 swiveling movement of the shaving head **6**, **7** with respect of the platform member **8**.

A cam member **73** is mounted between the legs **69**, **70** for permanently biasing them away from each other in order to maintain the bearing members **71** in cooperation with the 25 corresponding hooks **72**. Between the legs **69**, **70** is also mounted a plunger **74**, a front portion **75** of which is in contact with a V-shaped cam surface provided on the back side of the shaving head **6**, **7**. A compression spring **76**, interposed between the plunger **74** and the cam member **73**, 30 biases them away from each other, thereby pushing forward the plunger **74** to maintain permanent contact of the latter with the shaving head **6**, **7**, and pushing backwards the cam member **73** to maintain permanent contact of the latter with

the legs **69, 70**.

The lock-and-release mechanism **65** is triggered by actuators **77** mounted near the ends **3, 4** of the handle **2**. Each actuator **77** includes a button **78** which is mounted on 5 a flexible front portion **79** of a flat metal spring member **80**, a fixed back portion **81** of which is rigidly maintained in grooves **82, 83** formed in side walls **84, 85** of the bottom and top shell members **9, 10**.

The front portion **79** of each flat spring member **80** 10 extends longitudinally across an oval-shaped side opening **86** formed in the vicinity of each end of the handle by complementary cut-outs **87, 88** in the shell members **9, 10**.

Each spring member **80** is provided with two rectangular holes formed in the fixed back portion, i.e. a bottom hole 15 **89**, which cooperates with a hook **90** formed in the side wall **84** of the bottom shell member **9**, and a top hole **91** which cooperates with a hook **92** formed in the side wall **85** of the top shell member **10**. The spring members **80** thereby form clip members which hold the bottom and top shell 20 members **9, 10** together.

Each button **78** has an oval-shaped main body **93** which extends transversally through the opening **86** to be accessible for the fingers of the user, and a base portion **94** having an inwardly directed flat surface **95** in contact 25 with the front portion **79** of the spring member **80**, and an outwardly directed shoulder surface **96** which abuts against an inner edge of the opening **86**.

Each leg **69, 70** has a transversally protruding wing **97**, an end of which is in contact with an inner surface **98** 30 of the flat spring member **80**.

As depicted on **figure 8**, each lock-and-release mechanism **65** is attached to the platform member **8** by means of a cover member **99**, which is clipped onto the platform

member **8**, thereby sandwiching the lock-and-release mechanism **65** and holding it in place. More precisely, the cover member **99** comprises lateral flanges **100** provided with openings **101**, edges of which cooperate with 5 corresponding hooks **102** provided on the platform member **8**. Cut-outs **103** are formed in side walls of the cover member **99** for free passage of the wings **97**.

Longitudinal grooves **104**, **105** are formed in the cover member **99** and in the platform member **8**, cooperating with 10 corresponding ribs **106** provided on the plunger **74** in order to guide forth and back movement of the latter.

In the use position, wherein the razor head **6** or **7** protrudes from the corresponding end **3** or **4** of the handle **2**, the wings **97** contact the flexible front portion **79** of 15 the flat spring member **80**, so that, under manual action, movement of the buttons **78** toward each other biases the legs **69**, **70**, via the wings **97**, thereby releasing the bearing members **71** from the hooks **72**, whereas forward movement of the plunger **74** under bias of the spring **76** 20 ejects the shaving head **6** or **7** and allows for disposal and replacement of the latter.

In the intermediate position or in the other use position of the platform member **8**, wherein the razor head **6** or **7** is received within the handle **2**, the wings **97** 25 contact the fixed back portion **81** of the flat spring member **80**, so that movement of the buttons **78** has no effect on the legs **69**, **70**, thereby preventing disposal and replacement of the razor head **6** or **7** when it is not in use position. Making it is possible to replace a shaving head 30 only when it is in its use position prevents any wrong action on the buttons from accidentally ejecting head when disposal and replacement are not necessary.

As depicted on **figures 16** and **17**, razor **1** can be

removably mounted on a razor holder 107 to form a shaving system 108. Holder 107 has a planar back wall 109 for attachment to a wall 110, e.g. a bathroom or a shower wall, by means of a double-sided adhesive pad, a suction cup or any suitable equivalent means.

Holder 107 comprises lateral wings 111, 112 for engaging the razor handle 2, the wings 111, 112 together forming a V-shaped seat against which abuts a complementary side surface 113 of the handle 2, located in the vicinity of the central constriction 5. As depicted on figure 15, the wings 111, 112 are curved toward each other, so as to follow the curvature of the side surface 113 and firmly retain the razor 2 by simple vertical interlocking.

In the above recited embodiment, both ends 3, 4 of the handle 2 are permanently open. However, in optional embodiments, they may be at least partially and/or temporarily covered by cover members.

In a first optional embodiment, the razor is provided with movable flaps which are slidingly mounted on the handle under control of the platform actuator, between:

- a closed position in which each flap covers a corresponding end of the handle, so as to prevent manual access to the blades and protect the inside of the handle (in particular against dust and moisture), and
- an open position in which each flap uncovers the corresponding end, so as to allow the razor head to project outward from the end.

In a second optional embodiment, the razor is provided with manually removable lids which are mounted onto the ends of the handle whenever the corresponding razor heads are in retracted position, so as to prevent manual access to the blade and protect the inside of the handle. As soon

as the user needs to use one of the razor heads, he simply has to remove the corresponding lid.

In a third optional embodiment, each end of the razor handle is provided with a flexible terminal wall (e.g. 5 made of thermoelastic or rubber material) which allows the corresponding razor head to pass through when moving from its use position to its retracted position, and vice-versa.

For instance, this terminal wall is provided with a 10 central slot through which the corresponding razor head is able to pass while distorting the wall. The terminal wall forms a shield which prevents manual access to the blades and protects the inside of the handle, in particular against dust and moisture.